Decentralization and equity of resource allocation: evidence from Colombia and Chile

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Objective To investigate the relation between decentralization and equity of resource allocation in Colombia and Chile.
Methods The ''decision space'' approach and analysis of expenditures and utilization rates was used to provide a comparative analysis of decentralization of the health systems of Columbia and Chile.
Findings Evidence from Colombia and Chile suggests that decentralization, under certain conditions and with some specific policy mechanisms, can improve equity of resource allocation. In these countries, equitable levels of per capita financial allocations at the municipal level were achieved through different forms of decentralization — the use of allocation formulae, adequate local funding choices and horizontal equity funds. Findings on equity of utilization of services were less consistent, but they did show that increased levels of funding were associated with increased utilization. This suggests that improved equity of funding over time might reduce inequities of service utilization.
Conclusion Decentralization can contribute to, or at least maintain, equitable allocation of health resources among municipalities of different incomes.

Keywords Health care quality, access, and evaluation; Delivery of health care; Health care reform; Health services accessibility; Costs and cost analysis; National health programs/organization and administration/utilization; Efficiency, Organizational/economics; Social justice; Socioeconomic factors; Comparative study; Chile; Columbia (*source: MeSH, NLM*).

Mots clés Qualité, accés, évaluation soins; Délivrance soins; Réforme domaine santé; Accessibilité service santé; Coût et analyse coût; Programme national santé/organisation et administration/utilisation; Efficacité fonctionnement/économie; Justice sociale; facteur socio-économique; Etude comparative, Chili; Columbie (*source: MeSH, INSERM*).

Palabras clave Calidad de la atención de salud, acceso y evaluaciõn; Prestación de atención de salud; Reforma en atención de la salud; Accesibilidad a los servicios de salud; Costos y análisis de costo; Programas nacionales de salud/organización e administración/utilización; Eficiencia organizacional/economía; Justicia social; Factores socioeconómicos; Estudio comparativo, Chile; Columbia (*fuente: DeCS, BIREME*).

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Introduction

Health reformers have promoted decentralization as a means of achieving multiple objectives, such as improved efficiency, better responsiveness to local conditions and local accountability to community priorities (*1–3*). Often, however, even advocates of decentralization do not claim that it is likely to improve the equity of a health system. It commonly is argued that centralized systems are more likely to redistribute resources in favour of poorer areas and that local control and local financing will disadvantage poor communities by allowing rich communities to fund more and better health care services (*4, 5*).

Evidence from two Latin American countries that have implemented significant decentralizing reforms of their health systems allows us to evaluate these arguments by assessing the relation between decentralization and indicators of equity (equity of resource allocation at least) — and how service utilization rates change over time in relation to expenditure. This article describes the financing aspects of decentralization in Chile and Colombia, examines the trends of resource allocations over time at the decentralized levels, assesses the different policy mechanisms that can be used to promote or maintain equity in other countries and evaluates the relation between expenditure and service utilization rates.

Methods

This article is based on comparative research projects funded by US Agency for International Development (USAID) in Colombia and Chile — two countries with significant decentralizing reforms of their healthcare systems, which are major examples of decentralization in Latin America (*6*). Decentralization had been implemented for more than three

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years, and financial data was available to assess trends at the municipal level. The studies followed an innovative analytical approach — the "decision space" approach — developed by the principal author (TJB) for comparative analysis of decentralization of health systems (*7*). This approach defines the degree of choice (wide, moderate and narrow) for a series of functions that the decentralized units are allowed (financing, service delivery, human resources, targeting and governance). Colombia and Chile both had moderate degrees of choice over financing and more choice than most other countries in other functions (*6, 8*). We determined the process and degree of decentralization by reviewing government documents and by interviewing key informants with standardized criteria to identify "decision space". This article focuses on the financing "decision space" to assess the equity of financial decisions during processes of decentralization.

In this study, we used per capita expenditures at the municipal level as the first measure of equity in the health system. This measure is only an initial approximation of the issues related to equity. It does not address the allocation of resources within the municipalities, the adequacy of types of care (or the quality of care) or the variations in alternatives to public sector provision. Perhaps most importantly, this measure assumes that health needs are similar across the populations. If we were designing a formula for allocating resources, we would want to adjust the population figures based on direct data on health needs or on proxies such as age and sex ratios, socioeconomic data or population dispersion (*9*). This data was not available consistently at the local level for this comparative study. As a general measure of equity, however, per capita expenditures (which are the central basis for all allocation formulae) can be considered an adequate measure for comparative purposes.

Our second measure of equity was utilization of health services, which was measured by the number of medical consultations reported by the routine health information system of the ministries of health. This is another partial measure that does not take into account variations in quality or types of health services or the use of private providers. It is, however, a widely used statistic that allows comparisons over time and among countries.

In each country, financial data was available on actual expenditures of national funds allocated to the municipal level. Local sources of tax revenue in Colombia and Chile and local fees in Colombia were also reported (in Chile, municipalities were not allowed to collect local fees for primary care services). This data was collected for a series of years from the ministries of health in each country. In Colombia, financial data was available for 1994–97 — the first four years after the major decentralization occurred. In Chile, financial data was available for 1991–96 — a period beginning three years after decentralization had been implemented fully. To assess the relation between allocations to wealthier and poorer municipalities, additional data on the revenues of municipalities or districts was collected from other sources: the municipal subdirectorate of the Ministry of Interior (Subdere) in Chile and the Planning Ministry in Colombia (*6*).

Findings

Financing "decision space" in Colombia and Chile

In Chile and Colombia, the municipal governments were allowed a moderate amount of choice over financing. In both countries, the health systems were "devolved" to municipal governments in contrast to systems that are "deconcentrated" to geographically based administrative units within the ministry of health or those in which responsibilities are "delegated" to semi-autonomous bodies (*1*). The study included 318 of the 334 municipalities in Chile, with an average size of 44 595 in 1996, and 1058 of the 1080 municipalities in Colombia, with an average size of 38 006 in 1997. The population distribution in municipalities was relatively similar for both countries: only about 10% of the population lived in half the municipalities and around 70% lived in the largest municipalities.

Colombia

In Colombia in 1993, major laws on fiscal decentralization — laws 60 and 100 — were passed. These laws changed the allocation mechanism for intergovernmental transfers from a historically based budget system to two formulae that were based on population and were adjusted for other indicators. The budgetary year of 1994 was not affected by these laws and reflects the historical expenditure pattern of the centralized system.

Decentralization of financing in Colombia involved transferring funds and responsibilities to department governments (equivalent to provinces or states) and municipal governments. The process used two adjusted, population-based formulae to assign resources from several central sources to each department and municipality, and a complex percentage earmarking for health and education that allowed municipalities a limited choice of allocations between health and education. The Colombian system involved slightly different formulae for two different funding sources. One source, "municipal participation", used municipal population adjusted for poverty level, unmet basic needs, own-source fiscal contribution, administrative efficiency and quality-of-life indicators. The second source, "situado fiscal", was based partly on equal allocations to all departments and municipalities and partly on a per capita and inflation-based formula. Municipalities also were allowed to raise revenues from fees.

Chile

The process of fiscal decentralization in Chile started earlier than in Colombia. Some municipalities received responsibilities for primary health care facilities in the early 1980s, and almost all municipalities had these responsibilities by 1998. Unfortunately, data was not available from the initial period of decentralization: the earliest consistent dataset was for 1991 — three years after implementation of decentralization was complete.

Decentralization of financing in Chile involved the allocation of intergovernmental transfers specifically assigned to primary health care and directly allocated to the municipalities based on a per capita formula adjusted for rurality and municipal poverty level. In addition, municipalities could assign their own local revenues from municipal budgets to health or to several other social and civic services. Chile also had a horizontal equity fund for municipalities — the Municipal Common Fund — that redistributed local funds from wealthier to poorer municipalities based on a per capita formula. The Chilean system did not allow local fees for services that were free to all patients not covered by other insurance systems.

Per capita expenditures

Colombia

Contrary to general arguments about centralized systems, the pattern of allocation of national sources of funds was highly skewed in favour of the wealthier municipalities in terms of local revenues before decentralization (Table 1). The wealthiest decile of municipalities received 43 492 pesos per capita from national sources, but the poorest decile received only 7118 pesos per capita – a sixfold difference. In addition to assessing the equity of health expenditures by municipal revenues, we also assessed the equity of expenditures by municipal population and found a similar pattern of increased equity. The Gini coefficient of the per capita health expenditures from national sources by municipal population was 0.41 in 1994 and had reduced to 0.21 in 1997 (0 = total equality). Table 1 also shows that the national resources available for health expenditures increased significantly over the four years; this allowed even the richest municipalities a 50% increase in national funding. The laws also encouraged increases in contributions of local revenues to health. Table 1 shows that the wealthier municipalities spent much more per capita of their local revenues than the poorer municipalities: the wealthiest decile spent 41.5 times more than the poorest decile.

By 1995, the formula for assigning resources to municipalities that was implemented as part of the decentralization process had begun to take affect, and the ratio between intergovernmental transfers to the wealthiest and poorest municipalities had declined to 5.38:1. By 1997, the process of fiscal decentralization had resulted in almost equal per capita expenditures from national sources, with the wealthiest municipalities spending 64.6 pesos per capita and the poorest 54.6 pesos per capita. Remarkably, in regard to local revenue, the ratio between the richest and poorest municipalities reduced from 41.5 to 11.9 between 1994 and 1997. Although the rich still put more resources into health care than the poor, the gap during the process of decentralization declined rather than increased.

Chile

Table 2 shows the health expenditure pattern by source in municipal income deciles in 1996 in Chile. National expenditures based on an adjusted population-based formula were almost equal among the income deciles of municipalities (the ratio between the richest and poorest deciles was 0.9). This pattern was the same throughout the period for which data was available (1991–1996). We do not know the pattern before fiscal decentralization, but the trend was relatively equitable throughout the period of decentralization.

The contribution of local revenues was particularly equitable for the poorest and second richest deciles and, although the richest decile spent four times as much as the remaining nine deciles, the difference was significantly less than the 12-fold difference observed in Colombia at about the same point in the decentralization process. Furthermore, the gap between rich and poor declined between 1991 and 1996 in a similar way to that seen for Colombia — the ratio between the richest and poorest deciles reduced from 2.2 to 1.6 (Table 3).

Equity of utilization

In Chile, the average per capita number of visits to primary care facilities increased from 6.73 in 1992 to 7.16 in 1996, while in Colombia, the average number of general visits increased from 0.58 in 1994 to 0.80 in 1997. Municipalities with higher per capita total municipal expenditure rates also had higher per capita rates of utilization. We also found that municipalities with larger rural populations had higher volumes of service utilization per capita.

Discussion

This study shows that decentralization of financing in Colombia and Chile certainly did not increase inequality of resource allocations. In Colombia, decentralization significantly improved equity of intergovernmental transfers compared with the historical system, which favoured the richer municipalities. In Chile, although we do not know the amount of allocations in the centralized system, central government

Table 1. **Colombia: national and local expenditures per capita by municipal income decile (in thousands)**

Variable	Expenditures (Colombian pesos[a])							
	1994		1995		1996		1997	
	National	Local	National	Local	National	Local	National	Local
Deciles								
1 (poorest)	7.1	0.2	10.9	0.2	22.4	0.9	54.6	2.1
2	10.7	0.5	12.0	0.8	22.8	1.2	56.2	2.9
3	10.5	1.2	15.3	1.4	25.4	3.2	59.1	7.1
4	14.8	2.2	19.4	2.4	26.6	4.7	54.4	9.6
5	16.9	2.6	24.3	4.3	28.8	7.6	62.4	13.9
6	28.1	4.1	27.1	6.0	38.0	12.8	60.0	18.1
7	24.5	4.1	36.0	7.9	47.2	14.7	67.3	20.3
8	25.7	4.1	41.6	8.0	45.8	13.4	67.3	21.2
9	37.8	6.7	52.4	10.0	56.0	18.1	64.7	23.4
10 (richest)	43.4	8.3	58.7	14.0	52.7	21.2	64.6	25.0
Average	21.9	3.4	29.7	5.4	36.6	9.8	61.1	14.4
10th/1st	6.11	41.5	5.38	70.0	2.35	23.55	1.18	11.9

[a] Exchange rate: US$1 = 1307 Colombian pesos in 1998.
Source: Bossert (*6*).

Table 2. **Chile: expenditures on primary municipal health care per capita by municipal income decile[a] (1996)**

Variable	Expenditure (Chilean pesos)		
	Total	National	Local
Decile			
1 (poorest)	14 479.5	10 570.9	3 908.6
2	12 160.8	9 219.7	2 941.1
3	12 205.0	8 701.8	3 503.2
4	12 678.5	9 241.7	3 436.8
5	11 608.2	8 303.1	3 305.1
6	12 286.3	8 178.3	4 108.0
7	13 826.3	9 598.2	4 228.1
8	11 677.5	8 367.7	3 309.8
9	12 231.0	8 638.7	3 592.3
10 (richest)	23 496.0	9 479.2	14 016.8
Average	13 664.9	9 029.9	4 634.9
10th/1st	1.6	0.9	3.5

[a] Averages by deciles of municipal income.
[b] Exchange rate: US$1 = 407 Chilean pesos in 1996.
Source: Bossert (*6*).

transfers remained relatively equal throughout the 3–7 years after full implementation of decentralization.

Countries start the decentralization process from different points. Before decentralization in both study countries, no explicit population-based formula existed to allocate resources to municipal and district facilities. The yearly budgets were based on budgets from previous years and probably reflected earlier investments in facilities and human resources. Colombia may be an exceptionally skewed case because centralized historical budgeting based on municipal and central government decisions to invest in richer parts of the country resulted in a system that did not redistribute resources to the poor. Equity seems to have been achieved through a significant increase in available national funding that was distributed to reduce the gap between rich and poor rather than through a redistribution of resources from the rich to the poor. Although we do not have data from the period before decentralization in Chile, the national health system model may have used population-based criteria for planning investments and may have been more equitable than Colombia's before decentralization. A similar study in Zambia shows that some centralized systems may be relatively equitable even before decentralization. The Zambian health system was developed under the British colonial system, which emphasized investments according to a planning process that is likely to have been based on population estimates (*12*).

The cases do demonstrate the effectiveness of one aspect of decentralization — the use of a formula-based allocation of intergovernmental transfers. The use of formulae based primarily on population by both countries created or maintained a more equitable allocation of national funds among municipalities during the period of decentralization.

Unfortunately, data was not available consistently from both countries from the period before decentralization through to at least five years after — this would have given a clear, longitudinal, comparative analysis. As is often the case, especially in low- and middle-income countries, data in even the most data-rich countries are seldom as consistent as we would like. Such countries are among those with the best data on the process and provide sufficient information to draw important, if tentative, conclusions. Colombia had the most complete data for this analysis. The findings in Colombia were remarkable in that they showed how inequitable the allocations to health were at the outset of decentralization and how greater equity was achieved in a short period.

One of the major questions raised by the Chilean data was how the poorest and second richest deciles were able to allocate such similar per capita allocations from their own municipal revenues. This phenomenon is explained partly by an innovative horizontal equity fund that reallocated local revenues among municipalities. This fund — the Municipal Common Fund established under the military government — receives up to 60% of the revenues from local estate taxes and 50% of the local taxes from vehicle licence plates (most of which come from wealthier municipalities) and redistributes the monies to other municipalities based on a per capita formula. The four wealthiest municipalities also contribute a fraction of revenues from commercial and industrial licences to the fund. This fund makes up the major share of funding for all but the wealthiest municipality and averages out at about 60% of all local revenues. Local governments still had to choose to allocate resources to health rather than other local services; however, they seemed to do so relatively consistently with other localities regardless of overall municipal income.

The increasingly equitable allocation of local revenues in Colombia and Chile is surprising. In both countries, during the period of decentralization, localities tended toward a more equitable allocation of local resources compared with the assumptions of some theories about decentralization and with evidence of public school spending in the USA. This finding requires some explanation. Two factors may have an effect in local communities. One factor among poorer communities is that being given new responsibilities for health encourages local communities to put sufficient resources into their health systems to provide an adequate basic minimum. This process was helped in Chile by the Municipal Common Fund, which provided the poorer municipalities with additional resources that increased their per capita allocation to the same amount as all but the richest municipalities. The same phenomena of increased funding by the poor municipalities occurred in Colombia, although to a lesser extent because of the lack of a horizontal equity fund. It is important to note that the Chilean Municipal Common Fund redistributed wealth from the rich to the poor, whereas in Colombia, new resources were used to close the gap between rich and poor. The Chilean fund was implemented during the military regime, when localities did not have enough political power to block this redistributive mechanism. Considerable central power would have been needed to impose such an equity fund on wealthy municipalities in a democratic political system.

A second factor is active in the wealthier municipalities. In Colombia, wealthy municipalities did not increase their spending as fast as the poorer communities, which closed the gap between rich and poor. The gap in local per capita expenditures also declined in Chile. This may reflect the fact that large proportions of wealthy citizens use private sector facilities and therefore do not have much incentive to significantly improve the funding of public facilities.

Although we would like to argue that the increased equity of allocation resulted in improved utilization rates, our studies did not allow us to separate funding issues from other

Table 3. **Chile: expenditures in municipal primary health care per capita (in Chilean pesos) by municipal income decile[a] (1991 and 1996)**

Variable	Expenditure			
	1991	1996	Index 1991[b]	Index 1996[b]
Decile				
1 (poorest)	6 380.93	14 479.9	100.0	100.0
2	5 975.59	12 160.8	93.7	84.0
3	5 720.30	12 205.0	89.7	84.3
4	4 787.16	12 678.5	75.0	87.6
5	5 413.89	11 608.2	84.8	80.2
6	5 408.82	12 286.3	84.8	84.9
7	6 819.40	13 826.3	106.9	95.5
8	5 653.75	11 677.5	88.6	80.7
9	6 817.58	12 231.0	106.9	84.5
10 (richest)	13 977.76	23 496.0	219.1	162.8
Average	6 695.52	13 664.95		
10th/1st	2.2	1.6	2.2	1.6

[a] Averages by deciles of municipal income.
[b] Index based on percentage difference from the poorest decile, with the poorest decile ranked as 100 for each year.
Source: Bossert (*6*).

changes that might have affected utilization. In both countries, changes in social insurance, as well as other socioeconomic changes, occurred at the same time as fiscal decentralization. Nevertheless, we found some partial evidence that changes in utilization occurred in Chile and Colombia in the same direction and with a similar magnitude to changes in funding: utilization of services increased over the study period and the increase was related to the level of expenditure of the municipality. Other studies in Chile and Colombia that have addressed equity issues have shown that equity of access to insurance and equity of utilization across income groups in general (in Chile) and between rural and urban populations (in Colombia) have improved slightly during the period of decentralization (*10, 11*). Although these studies do not assess the equity of utilization at the municipal level, they nevertheless also suggest that changes in resource allocation among municipalities were related to utilization.

Conclusion

Evidence from Chile and Colombia shows that decentralization can contribute to, or at least maintain, more equitable allocation of health resources among municipalities of different incomes. The data from Colombia shows that a population-based formula for national allocations is an effective mechanism for achieving equity of expenditures. Although the use of a population or needs-based formula does not require a process of decentralization, it is more likely to be implemented as part of that process. Evidence from these countries also suggests that more equitable allocation of resources may contribute to more equitable utilization of health services across income groups and between rural and urban areas. ■

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Résumé

Décentralisation et répartition équitable des ressources : observations au Chili et en Colombie

Objectif Etudier le lien entre la décentralisation et le degré d'équité dans la répartition des ressources au Chili et en Colombie.

Méthodes On a fait une analyse comparée de la décentralisation des systèmes de santé au Chili et en Colombie selon la méthode de la « marge de décision » et en mesurant l'équité d'après les dépenses et le taux d'utilisation.

Résultats Les données recueillies au Chili et en Colombie incitent à penser que, dans certaines conditions et grâce à certains mécanismes de décision, la décentralisation peut déboucher sur une répartition plus équitable des ressources. Dans ces pays, différentes formes de décentralisation (formules d'allocation des ressources, choix de financement judicieux au plan local et fonds horizontaux de redistribution) ont conduit à une répartition équitable des crédits par habitant au niveau municipal. Pour ce qui est de l'équité dans l'utilisation des services, les résultats sont moins homogènes mais montrent que le taux d'utilisation augmente avec le financement, ce qui semble indiquer qu'avec le temps, un financement plus équitable peut réduire les inégalités eu égard à l'utilisation des services.

Conclusion La décentralisation peut contribuer à une répartition équitable des ressources de santé entre des municipalités qui n'ont pas les mêmes revenus, ou tout au moins la maintenir.

Resumen

Descentralización y asignación equitativa de los recursos: evidencia obtenida en Colombia y Chile

Objetivo Investigar la relación entre la descentralización y la equidad de la distribución de los recursos en Colombia y Chile.

Métodos Se utilizaron el criterio del ''espacio decisional'' y el análisis de los gastos y las tasas de utilización para realizar un análisis comparativo de la descentralización de los sistemas de salud en Colombia y Chile.

Resultados La evidencia obtenida en estos dos países indica que la descentralización, siempre que se haga en determinadas

condiciones y acompañada de algunos mecanismos de política específicos, puede propiciar una distribución más equitativa de los recursos. En los dos países se consiguió que las asignaciones financieras per cápita a nivel municipal alcanzaran niveles equitativos gracias a distintas formas de descentralización: uso de fórmulas de asignación, opciones idóneas de financiación local y fondos de equidad horizontal. Los resultados relativos a la equidad de la utilización de los servicios fueron menos coherentes, pero sí mostraron que el aumento del financiamiento se asociaba a una mayor utilización. Esto indica que un financiamiento más equitativo permitiría, con el tiempo, reducir las desigualdades en materia de utilización de los servicios.

Conclusión La descentralización puede favorecer, o como mínimo mantener, una distribución equitativa de los recursos de salud entre municipios con distintos ingresos.

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